YCSB for KVRocks

1. Environment

   apt-get install default-jdk

   apt-get install maven

2. Prepare source code

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# tree
.
├── KVRocks-2573f0bb.tgz
├── kvrocks.zip
└── setup_build_kvrocks.sh
```

3. Extract KVRocks source code

   tar -xvf KVRocks-2573f0bb.tgz

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# tar -xvf KVRocks-2573f0bb.tgz
KVRocks/
KVRocks/README.md
KVRocks/snappy/
KVRocks/snappy/google-snappy-b02bfa7/
KVRocks/snappy/google-snappy-b02bfa7/COPYING
```

4. cp new setup_build_kvrocks.sh and YCSB kvrocks.zip to KVRocks/kvdb/java/

   cp setup_build_kvrocks.sh KVRocks/kvdb/java/

   cp kvrocks.zip KVRocks/kvdb/java/

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# cp setup_build_kvrocks.sh KVRocks/kvdb/java/
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# cp kvrocks.zip KVRocks/kvdb/java/
root@kvhs-OptiPlex-9020:/home/kvhs/liuna#
```

5. execute ./setup_build_kvrocks.sh to build kvdb and YCSB

   cd KVRocks/kvdb/java/

   ./setup_build_kvrocks.sh

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# cp KVRocks.zip KVRocks/kvdb/java/
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# cd KVRocks/kvdb/java/
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/KVRocks/kvdb/java# ./setup_build_kvrocks.sh
+++ readlink -f ./setup_build_kvrocks.sh
++ dirname /home/kvhs/liuna/KVRocks/kvdb/java/setup_build_kvrocks.sh
+ java_dir=/home/kvhs/liuna/KVRocks/kvdb/java
+ KVRocks_dir=/home/kvhs/liuna/KVRocks/kvdb/java/../..
+ set +e
+ sudo apt-get install git g++ cmake libboost-all-dev libevent-dev libdouble-conversi
nutils-dev libjemalloc-dev libssl-dev libc6-dev libreadline-dev libncurses5-dev libai
Reading package lists... Done
Building dependency tree
Reading state information... Done
bison is already the newest version (2:3.0.4.dfsg-1).
g++ is already the newest version (4:5.3.1-1ubuntu1).
libaio-dev is already the newest version (0.3.110-2).
libdouble-conversion-dev is already the newest version (2.0.1-3ubuntu2).
liblz4-dev is already the newest version (0.0~r131-2ubuntu2).
liblzma-dev is already the newest version (5.1.1alpha+20120614-2ubuntu2).
libncurses5-dev is already the newest version (6.0+20160213-1ubuntu1).
libreadline-dev is already the newest version (6.3-8ubuntu2).
libsnappy-dev is already the newest version (1.1.3-2).
```

Execute success

```
Downloaded: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/2.6/plexus-io-2.6.jar (83
[WARNING] The following patterns were never triggered in this artifact exclusion filter:
o  '*:sources'

[INFO] Building tar: /home/kvhs/liuna/YCSB/kvrocks/target/ycsb-kvrocks-binding-0.18.0-SNAPSHOT.tar.gz
[INFO] ------------------------------------------------------------------------
[INFO] Reactor Summary:
[INFO]
[INFO] YCSB Root ........................................... SUCCESS [08:17 min]
[INFO] Core YCSB ........................................... SUCCESS [05:17 min]
[INFO] Per Datastore Binding descriptor .................... SUCCESS [  0.134 s]
[INFO] YCSB Datastore Binding Parent ....................... SUCCESS [01:11 min]
[INFO] KVRocks Java Binding ................................ SUCCESS [ 54.299 s]
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 15:41 min
[INFO] Finished at: 2019-10-25T23:14:23-04:00
[INFO] Final Memory: 37M/295M
[INFO] ------------------------------------------------------------------------
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/KVRocks/kvdb/java#
```

cd ../../../

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/KVRocks/kvdb/java# cd ../../../
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# ls
KVRocks   KVRocks-2573f0bb.tgz   kvrocks.zip   setup_build_kvrocks.sh   YCSB
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# ll
total 33588
drwxrwxrwx  4 root root      4096 Oct 25 22:56 ./
drwxr-xr-x 20 kvhs kvhs      4096 Oct 25 03:49 ../
drwxr-xr-x 10 9987 49672     4096 Oct 11 22:50 KVRocks/
-rw-rw-r--  1 kvhs kvhs  34362283 Oct 25 05:01 KVRocks-2573f0bb.tgz
-rw-rw-r--  1 kvhs kvhs      5704 Oct 25 05:01 kvrocks.zip
-rw-rw-r--  1 kvhs kvhs      1932 Oct 25 05:01 setup_build_kvrocks.sh
drwxr-xr-x 62 root root      4096 Oct 25 23:06 YCSB/
```

 We can see YCSB folder

6. cd YCSB then load & run workload

cd YCSB/

./bin/ycsb load kvrocks -P workloads/workloada

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna# cd YCSB/
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/YCSB# ./bin/ycsb load kvrocks -P workloads/workloada
[WARN]   Running against a source checkout. In order to get our runtime dependencies we'll have to invoke
of your system, this may take ~30-45 seconds
[DEBUG]  Running 'mvn -pl site.ycsb:kvrocks-binding -am package -DskipTests dependency:build-classpath -D
tputFilterFile=true'
java -cp /home/kvhs/liuna/YCSB/kvrocks/conf:/home/kvhs/liuna/YCSB/kvrocks/target/kvrocks-binding-0.18.0-S
ry/org/apache/htrace/htrace-core4/4.1.0-incubating/htrace-core4-4.1.0-incubating.jar:/home/kvhs/liuna/YCS
2/repository/net/jcip/jcip-annotations/1.0/jcip-annotations-1.0.jar:/root/.m2/repository/org/hdrhistogram
am-2.1.4.jar:/root/.m2/repository/org/codehaus/jackson/jackson-mapper-asl/1.9.4/jackson-mapper-asl-1.9.4.
odehaus/jackson/jackson-core-asl/1.9.4/jackson-core-asl-1.9.4.jar:/home/kvhs/liuna/YCSB/core/target/core-
Client -db site.ycsb.db.KVRocksClient -P workloads/workloada -load
Command line: -db site.ycsb.db.KVRocksClient -P workloads/workloada -load
YCSB Client 0.18.0-SNAPSHOT

Loading workload...
Starting test.
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
[OVERALL], RunTime(ms), 1078
[OVERALL], Throughput(ops/sec), 927.643784786642
[TOTAL_GCS_PS_Scavenge], Count, 0
[TOTAL_GC_TIME_PS_Scavenge], Time(ms), 0
[TOTAL_GC_TIME_%_PS_Scavenge], Time(%), 0.0
[TOTAL_GCS_PS_MarkSweep], Count, 0
[TOTAL_GC_TIME_PS_MarkSweep], Time(ms), 0
[TOTAL_GC_TIME_%_PS_MarkSweep], Time(%), 0.0
[TOTAL_GCs], Count, 0
[TOTAL_GC_TIME], Time(ms), 0
[TOTAL_GC_TIME_%], Time(%), 0.0
[CLEANUP], Operations, 1
[CLEANUP], AverageLatency(us), 22840.0
[CLEANUP], MinLatency(us), 22832
[CLEANUP], MaxLatency(us), 22847
[CLEANUP], 95thPercentileLatency(us), 22847
[CLEANUP], 99thPercentileLatency(us), 22847
[INSERT], Operations, 1000
[INSERT], AverageLatency(us), 35.513
[INSERT], MinLatency(us), 8
[INSERT], MaxLatency(us), 14487
[INSERT], 95thPercentileLatency(us), 50
[INSERT], 99thPercentileLatency(us), 104
[INSERT], Return=OK, 1000
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/YCSB#
```

./bin/ycsb load   kvrocks   -P workloads/workloada

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/YCSB# ./bin/ycsb load  kvrocks  -P workloads/workloada
[WARN]  Running against a source checkout. In order to get our runtime dependencies we'll have to invoke
of your system, this may take ~30-45 seconds
[DEBUG]  Running 'mvn -pl site.ycsb:kvrocks-binding -am package -DskipTests dependency:build-classpath -
tputFilterFile=true'
java -cp /home/kvhs/liuna/YCSB/kvrocks/conf:/home/kvhs/liuna/YCSB/kvrocks/target/kvrocks-binding-0.18.0-
ry/org/apache/htrace/htrace-core4/4.1.0-incubating/htrace-core4-4.1.0-incubating.jar:/home/kvhs/liuna/YC
2/repository/net/jcip/jcip-annotations/1.0/jcip-annotations-1.0.jar:/root/.m2/repository/org/hdrhistogra
am-2.1.4.jar:/root/.m2/repository/org/codehaus/jackson/jackson-mapper-asl/1.9.4/jackson-mapper-asl-1.9.4
odehaus/jackson/jackson-core-asl/1.9.4/jackson-core-asl-1.9.4.jar:/home/kvhs/liuna/YCSB/core/target/core
Client -db site.ycsb.db.KVRocksClient -P workloads/workloada -load
Command line: -db site.ycsb.db.KVRocksClient -P workloads/workloada -load
YCSB Client 0.18.0-SNAPSHOT

Loading workload...
Starting test.
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
[OVERALL], RunTime(ms), 1014
[OVERALL], Throughput(ops/sec), 986.1932938856016
[TOTAL_GCS_PS_Scavenge], Count, 0
[TOTAL_GC_TIME_PS_Scavenge], Time(ms), 0
[TOTAL_GC_TIME_%_PS_Scavenge], Time(%), 0.0
[TOTAL_GCS_PS_MarkSweep], Count, 0
[TOTAL_GC_TIME_PS_MarkSweep], Time(ms), 0
[TOTAL_GC_TIME_%_PS_MarkSweep], Time(%), 0.0
[TOTAL_GCs], Count, 0
[TOTAL_GC_TIME], Time(ms), 0
[TOTAL_GC_TIME_%], Time(%), 0.0
[CLEANUP], Operations, 1
[CLEANUP], AverageLatency(us), 36272.0
[CLEANUP], MinLatency(us), 36256
[CLEANUP], MaxLatency(us), 36287
[CLEANUP], 95thPercentileLatency(us), 36287
[CLEANUP], 99thPercentileLatency(us), 36287
[INSERT], Operations, 1000
[INSERT], AverageLatency(us), 23.944
[INSERT], MinLatency(us), 6
[INSERT], MaxLatency(us), 815
[INSERT], 95thPercentileLatency(us), 59
[INSERT], 99thPercentileLatency(us), 99
[INSERT], Return=OK, 1000
```

./bin/ycsb run kvrocks   -P workloads/workloada -threads 8 –s

```
root@kvhs-OptiPlex-9020:/home/kvhs/liuna/YCSB# ./bin/ycsb run kvrocks  -P workloads/workloada -threads 8 -s
[WARN]  Running against a source checkout. In order to get our runtime dependencies we'll have to invoke Ma
of your system, this may take ~30-45 seconds
[DEBUG]  Running 'mvn -pl site.ycsb:kvrocks-binding -am package -DskipTests dependency:build-classpath -Din
tputFilterFile=true'
java -cp /home/kvhs/liuna/YCSB/kvrocks/conf:/home/kvhs/liuna/YCSB/kvrocks/target/kvrocks-binding-0.18.0-SNA
ry/org/apache/htrace/htrace-core4/4.1.0-incubating/htrace-core4-4.1.0-incubating.jar:/home/kvhs/liuna/YCSB/
2/repository/net/jcip/jcip-annotations/1.0/jcip-annotations-1.0.jar:/root/.m2/repository/org/hdrhistogram/H
am-2.1.4.jar:/root/.m2/repository/org/codehaus/jackson/jackson-mapper-asl/1.9.4/jackson-mapper-asl-1.9.4.ja
odehaus/jackson/jackson-core-asl/1.9.4/jackson-core-asl-1.9.4.jar:/home/kvhs/liuna/YCSB/core/target/core-0.
Client -db site.ycsb.db.KVRocksClient -P workloads/workloada -threads 8 -s -t
Command line: -db site.ycsb.db.KVRocksClient -P workloads/workloada -threads 8 -s -t
YCSB Client 0.18.0-SNAPSHOT

Loading workload...
Starting test.
2019-10-25 23:40:18:682 0 sec: 0 operations; est completion in 0 second
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
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DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
DBWrapper: report latency for each error is false and specific error codes to track for latency are: []
2019-10-25 23:40:19:715 1 sec: 1000 operations; 956.02 current ops/sec; [READ: Count=496, Max=2841, Min=7,
 99.9=2841, 99.99=2841] [CLEANUP: Count=8, Max=17215, Min=1, Avg=2152.38, 90=4, 99=17215, 99.9=17215, 99.99
Max=1702, Min=16, Avg=58.96, 90=83, 99=494, 99.9=1183, 99.99=1702]
[OVERALL], RunTime(ms), 1046
[OVERALL], Throughput(ops/sec), 956.0229445506692
[TOTAL_GCS_PS_Scavenge], Count, 0
[TOTAL_GC_TIME_PS_Scavenge], Time(ms), 0
[TOTAL_GC_TIME_%_PS_Scavenge], Time(%), 0.0
[TOTAL_GCS_PS_MarkSweep], Count, 0
[TOTAL_GC_TIME_PS_MarkSweep], Time(ms), 0
[TOTAL_GC_TIME_%_PS_MarkSweep], Time(%), 0.0
[TOTAL_GCs], Count, 0
[TOTAL_GC_TIME], Time(ms), 0
[TOTAL_GC_TIME_%], Time(%), 0.0
[READ], Operations, 496
[READ], AverageLatency(us), 103.78629032258064
[READ], MinLatency(us), 7
[READ], MaxLatency(us), 2841
[READ], 95thPercentileLatency(us), 366
[READ], 99thPercentileLatency(us), 1341
[READ], Return=OK, 496
[CLEANUP], Operations, 8
[CLEANUP], AverageLatency(us), 2152.375
[CLEANUP], MinLatency(us), 1
[CLEANUP], MaxLatency(us), 17215
[CLEANUP], 95thPercentileLatency(us), 17215
[CLEANUP], 99thPercentileLatency(us), 17215
[UPDATE], Operations, 504
[UPDATE], AverageLatency(us), 58.96031746031746
[UPDATE], MinLatency(us), 16
[UPDATE], MaxLatency(us), 1702
[UPDATE], 95thPercentileLatency(us), 122
[UPDATE], 99thPercentileLatency(us), 494
[UPDATE], Return=OK, 504
```